Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A method for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, said method comprising:

a) acquiring at least ~~one~~ two reference signals, said at least ~~one~~ two reference signals corresponding to ~~a~~ two distinct CNS states obtained from one or more reference subject or subjects;

b) selecting a wavelet transformation function which, when applied to one of said at least ~~one~~ two reference signals, yields a set of coefficients;

c) selecting a statistical function which, when applied to said set of coefficients derived from one of said at least ~~one~~ two reference signals, or a subset of said set of coefficients, yields a reference data set which characterizes the distinct CNS state corresponding to said one of at least ~~one~~ two reference signals;

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d) applying said wavelet transformation and statistical function to said at least ~~one~~ two reference signals to produce ~~one or more~~ reference data sets which distinguish between the distinct CNS state~~(s)~~ corresponding to ~~each~~ said reference signals;

e) observing the brain activity of said subject to produce said observed signal;

f) applying said wavelet transformation and statistical function to said observed signal to produce an observed data set;

g) comparing the observed data set to ~~one or more~~ said reference data sets; and

h) computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison;

wherein said at least two reference signals correspond to distinct CNS states which are two extreme states.

Claim 2 (original): The method of claim 1 wherein said observed and reference signals representing measured brain activity of a subject are electroencephalograms.

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Claim 3 (canceled)

Claim 4 (previously presented): The method of claim 1 wherein reference signal is only obtained from said one or more reference subject or subjects who are not the same individual as said observed subject.

Claim 5 (original): The method of claim 1 wherein said statistical function is selected from the group histogram, probability density function, standard deviation, or variance.

Claim 6 (previously presented): The method of claim 1 wherein said statistical function is a probability density function and is applied to the observed and reference signals at different times.

Claim 7 (original): The method of claim 1 used to measure neurological activity in said subject to ascertain the level of consciousness of said subject.

Claim 8 (original): The method of claim 1 used to measure neurological activity in said subject to ascertain the level of hypnosis of said subject.

Claim 9 (original): The method of claim 1 used to measure neurological activity in said subject to ascertain the effects of anesthetic agents on the brain of said subject.

Claim 10 (canceled)

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Claim 11 (original): The method of claim 1 used to measure neurological activity in said subject to obtain the pharmacodynamic and pharmacokinetic models of neurologic and psychoactive compounds and medicaments.

Claim 12 (original): The method of claim 1 used to measure neurological activity in said subject to ascertain titration and dosage profiles of neurologic and psychoactive compounds and medicaments.

Claim 13 (original): The method of claim 1 used to measure neurological activity in said subject to detect and ascertain the level of brain ischemia.

Claim 14 (original): The method of claim 1 used to measure neurological activity in said subject to ascertain the effects of neurologic and psychoactive compounds and medicaments on the brain of said subject.

Claim 15 (original): The method of claim 1 wherein said distinct CNS states represent any distinct states taken from the continuum from conscious to no brain activity.

Claim 16 (previously presented): The method of claim 15 wherein said distinct CNS states are selected from sedation, light anesthesia, deep anesthesia and substantially no brain activity.

Claim 17 (canceled)

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Claim 18 (currently amended): The method of claim 17 wherein said extreme states are fully conscious and substantially no brain activity.

Claim 19 (canceled)

Claim 20 (canceled)

Claim 21 (previously presented): The method of claim 1 wherein said wavelet transformation function is a wavelet packets transform.

Claim 22 (previously presented): The method of claim 1 wherein said wavelet transformation function is any transform with joint time and frequency localization properties.

Claim 23 (previously presented): The method of claim 1 wherein said wavelet transformation function is a wavelet filter.

Claim 24 (canceled)

Claim 25 (canceled)

Claim 26 (previously presented): The method of claim 1 wherein said comparison is done by computing the correlation metrics between the observed data set and the reference data sets.

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Claim 27 (previously presented): The method of claim 1 wherein said comparison is done by means of a distance metrics between the observed data set and the reference data sets.

Claim 28 (canceled)

Claim 29 (canceled)

Claim 30 (original): The method of claim 1 wherein a single-channel electroencephalogram is used to provide the observed and reference signals.

Claim 31 (original): The method of claim 1 wherein a multiple-channel electroencephalogram is used to provide the observed and reference signals.

Claim 32 (currently amended): A system for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, given at least ~~one~~ two reference signals, said at least ~~one~~ two reference signals corresponding to ~~a~~ two distinct CNS states obtained from at least one reference subject, given a wavelet transformation function which is applied to said at least two ~~one or more said~~ reference signals, or portions thereof, to yield one or more sets of coefficients, and given a statistical function which is applied to said sets of coefficients, or portions thereof, to yield one or more reference data sets which distinguish between the

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distinct CNS states corresponding to said at least two ~~one or more said~~ reference signals, said system comprising:

a) sensor for observing the electrical brain activity of said subject to produce ~~an~~ said observed signal; and

b) digital signal processor for

i) applying said wavelet transformation function and said statistical function to said observed signal to produce an observed data set;

ii) comparing the observed data set to ~~one or more~~ said reference data sets; and

iii) computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison;

wherein said at least two reference signals correspond to distinct CNS states which are two extreme states.

Claim 33 (canceled)

Claim 34 (canceled)

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Claim 35 (canceled)

Claim 36 (canceled)

Claim 37 (currently amended): ~~The method of claim 1~~ A method for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, said method comprising:

a) acquiring at least one reference signal, said at least one reference signal corresponding to a distinct CNS state obtained from one or more reference subject or subjects;

b) selecting a wavelet transformation function which, when applied to said at least one reference signal, yields a set of coefficients;

c) selecting a statistical function which, when applied to said set of coefficients derived from said at least one reference signal, or a subset of said set of coefficients, yields a reference data set which characterizes the distinct CNS state corresponding to said at least one reference signal;

d) applying said wavelet transformation and statistical function to said at least one reference signal to produce one or more reference data sets which

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distinguish the distinct CNS state(s) corresponding to each reference signal;

e) observing the brain activity of said subject to produce said observed signal;

f) applying said wavelet transformation and statistical function to said observed signal to produce an observed data set;

g) comparing the observed data set to one or more said reference data sets; and

h) computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison

wherein said comparison is done by computing the difference between said observed and reference data sets using a vector p-norm.

Claim 38 (currently amended): A system for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, given a time-frequency transformation and a statistical function said system comprising:

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a) a device for acquiring ~~the~~ a first reference signal, said reference signal corresponding to ~~the~~ an awake CNS state, from at least one awake subject;

b) a device for generating ~~the~~ a second reference signal, said reference signal corresponding to ~~the~~ a CNS state of substantially no brain activity, using a time series of substantially zero values;

c) a device for applying said time-frequency transformation and statistical function to the two said reference signals to produce two reference data sets;

d) a device for observing the brain activity of said subject to produce said observed signal;

e) a device for applying said time-frequency transformation and statistical function to said observed signal to produce an observed data set;

f) a device for comparing the observed data set to the two said reference data sets by computing the difference between the said observed and reference data sets using a vector p-norm; and

g) a device for computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison.

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Claim 39 (currently amended): A system for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, given a mathematical formula of Dirac function form, a time-frequency transformation and a statistical function said system comprising:

a) a device for acquiring ~~the~~ a first reference signal, said reference signal corresponding to ~~the~~ an awake CNS state, from at least one awake subject;

b) a device for applying said time-frequency transformation and statistical function to the said first reference signal to produce ~~the~~ an awake reference data set;

c) a device for generating ~~the~~ a second reference data set using said mathematical formula of Dirac function form, said reference data set being a representation of the CNS state corresponding to substantially no brain activity;

d) a device for observing the brain activity of said subject to produce said observed signal;

e) a device for applying said time-frequency transformation and statistical function to said observed signal to produce an observed data set;

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f) a device for comparing the observed data set to the two said reference data sets; and

g) a device for computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison.

Claim 40 (currently amended): A method for extracting information from an observed signal representing measured brain activity of a subject in order to evaluate the level of depression of the CNS of said subject, said method comprising:

a) generating a first reference signal, said reference signal corresponding to ~~the~~ an awake CNS state, using a random noise signal generator function;

b) generating a second reference signal, said reference signal corresponding to ~~the~~ a CNS state of substantially no brain activity, using a time series of substantially zero values;

c) selecting a time-frequency transformation function which, when applied to one of said reference signals yields a set of coefficients;

d) selecting a statistical function which, when applied to said set of coefficients derived from one of said reference signals, or a subset of that

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said set of coefficients, yields a reference data set which characterizes the distinct CNS state corresponding to that said reference signal;

e) applying said time-frequency transformation and statistical function to the two said reference signals to produce two reference data sets which distinguish the awake and substantially no brain activity CNS states;

f) observing the brain activity of said subject to produce said observed signal;

g) applying said ~~wavelet transformation~~time-frequency transformation and statistical function to said observed signal to produce an observed data set;

h) comparing the observed data set to one or more said reference data sets; and

i) computing a numerical value or values representative of said level of depression of the CNS of said subject which results from said comparison.

Claim 41 (canceled)

Claim 42 (canceled)

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Claim 43 (new): The system of claim 38 wherein said statistical function is selected from the group histogram, probability density function, standard deviation, or variance.

Claim 44 (new): The system of claim 38 used to measure neurological activity in said subject to ascertain the level of consciousness of said subject.

Claim 45 (new): The system of claim 38 used to measure neurological activity in said subject to ascertain the level of hypnosis of said subject.

Claim 46 (new): The system of claim 38 used to measure neurological activity in said subject to ascertain the effects of anesthetic agents on the brain of said subject.

Claim 47 (new): The system of claim 38 used to measure neurological activity in said subject to obtain the pharmacodynamic and pharmacokinetic models of neurologic and psychoactive compounds and medicaments.

Claim 48 (new): The system of claim 38 used to measure neurological activity in said subject to ascertain titration and dosage profiles of neurologic and psychoactive compounds and medicaments.

Claim 49 (new): The system of claim 38 used to measure neurological activity in said subject to detect and ascertain the level of brain ischemia.

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Claim 50 (new): The system of claim 38 wherein said time-frequency transformation function is a wavelet transform.

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